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"Beef, Real Food for Real People"

An Industrial Analysis of the Beef Industry

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"BEEF, REAL FOOD FOR REAL PEOPLE"

CDR Danny Struebing

Abstract: This is a Defense Industry Study of the "beef cattle" industry, from field to food processor. As the largest segment of the food business, the red-meat industry accounted for 18.5% or $66.9 billion of food shipments in 1991. It was selected for study because beef is the major source of protein for Americans and dominates the food industry in dollar sales. This paper looks at the structure, conduct and performance of the beef cattle industry. The paper also will:

*evaluate the industry in relation to national security and defense;

*identify scientific, technological and manufacturing trends affecting the industry;

*analyze the impact on the industry of our trade policies and international trade and competition;

*recommend ways to improve the industry; and

*list issues for future consideration.

A change in consumer habits and tastes led to a decline in domestic demand for beef products. As turmoil continues in all segments of the industry from the fall in demand for beef, the future of the industry will depend on its ability to be innovative in expanding into value added products and foreign markets.

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CHAPTER 1 INTRODUCTION

"The history of livestock raising and meatpacking from 1607 through 1983 is replete with scandal, government intervention, and mutual recriminations among a myriad of interest groups, none of whom believes that the public sector behaved properly."[1]

The beef cattle industry is a key segment of agribusiness, which includes modern farming, food processing, and the industries that support them. As the largest segment of the food business, the red-meat industry accounted for 18.5% or $66.9 billion of food shipments in 1991.

This paper will look at the structure, conduct and performance of the beef cattle industry. The paper also will:

*evaluate the industry in relation to national security and defense;

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[1] Skaggs, Jimmy M., PRIME CUT, Texas A&M University Press, 1986, p. 3.

THE BEEF CATTLE INDUSTRY

There are four parts to the beef cattle industry: (1) farmers and ranchers who raise and grow beef cattle and calves (Standard Identification Code [SIC] 0212), (2) cattle feeders (SIC 0211), (3) meatpacking (SIC 2011 & 5147), and (4) wholesale and retail.

The ranching and farming segment involves raising cattle through use of extensive grazing acreage, whether on a large ranch or the family farm. Associated with this group is light and intensive pasture and hay production acres. Calves usually graze on range or pasture and light grain rations until they reach 600 to 800 or more pounds. At 400 pounds, after weaning, calves may be sold to other interests, such as backgrounders who specialize in growing calves before intensive feeding.

The next segment involves feeding high-energy grain and other ingredient rations to calves at feedlots; this produces high quality beef that increases the value of the cattle. This adds the final 400 to 700 pounds of weight to the cattle. Few ranchers or farmers finished fattening their cattle on pasture or harvested forage.

Meatpackers then buy the cattle to be slaughtered and processed. They slaughter fed cattle in two types of plants: (1) plants that only sell carcass beef and (2) integrated slaughtering-fabricating plants that break down the slaughtered carcasses into primal and sub-primal cuts to be placed and shipped in individual boxes (boxed beef). Most of the large

meatpackers that slaughter and process beef a_so slaughter and process hogs.

The final segment is the wholesaling and retailing of the beef. Retail markets are divided into two general classifications--supermarkets and the hotel, restaurant, and institutional (HRI) trade. (The wholesale and retail segment will not be discussed in this paper.)

Figure B-1 provides a description of the life cycle of beef cattle from the farm to the meatpacker. A heifer calves about 10 months after a farmer decides to increase production. The farmer weans the calf at about 425 pounds, and approximately months after birth. Then the farmer places the calf into a five month growout period. The farmer sells the calf to a feedlot for five to six months of high concentration feeding required to produce a 1,050 steer for slaughter.

THE PRICE PRODUCTION CYCLE

A price production (cattle) cycle "refers to the time that passes from when a farmer opts to raise a particular species of livestock until that animal's carcass reaches the marketplace...Initially it takes 2 1/2 years for prices to peak after cattlemen begin to reduce production."[2] A cycle of increases and decreases in cattle numbers characterizes the beef cattle industry. This cycle occurs because of the biological lag

[2] Crom, Richard J., "Economics of the U.S. Meat Industry", Economic Research Service, USDA, 1988, P. 12.

in production and the effects of production decisions in reaction to economic forces. The industry normally experiences six or seven years of growth followed by 3 or 4 years of decline as measured by total cattle numbers.

During the growth phase attractive prices for calves cause producers to hold back additional heifers for breeding, reducing the number marketed. Livestock raisers are placing more cattle in feedlots vice sending them directly to slaughter plants. This reduces the current supply of beef, further raising prices and stimulating more herd expansion. Because of the biological lag in beef production, it takes 3 to 5 years for the expanded supply of beef to reach the consumer. But, the increase in the number of animals slaughtered results in a glut on the market and prices fall. When producers rush to liquidate herds, market price drops even more severely. The overall number of beef cattle contracts, marketing drops and prices begin to rise, starting the cycle over anew. External factors--weather, feed prices, consumer income and expenditures, inflation, and charges in consumer preferences--also affect the cattle cycle.

HISTORY OF THE BEEF CATTLE INDUSTRY

For the past 200 years farmers and ranchers have produced a huge supply of beef to meet the almost continuous growth of consumer demand. For the first century of our history American meatpacking was a myriad of independent small businesses; they bought beef and other meat products mainly from the millions of

mostly anonymous small-scale livestock raisers and farmers who raise both crops and livestock.

The dramatic growth of American agriculture and industry after the Civil War included the beef cattle industry. This was the age of the western cattle ranches and trail drives immortalized in American myth by countless western books and movies. Still, as earlier, local farmers and stock raisers continued to provide the largest share of beef to local markets. Aggressive mid-western meatpackers gained control of the fresh meat trade after the Civil War. They were assisted by the rapid growth in railroads--from 35,000 miles of track in 1865 to 193,000 miles by 1900--and the development of refrigeration rail car technology. By 1890 five giant companies, known as the "beef trust", successfully integrated their businesses backward and forwards, dominating the industry and creating large industrial empires (see Appendix A-2). The industry constituted an oligopoly that could and did fix prices; it was also an oligopsony--a marketplace of many sellers dominated by a few buyers.

From the late nineteenth century until 1920 the meat packing was continually under attack by the U.S. government on many fronts. In 1906 Upton Sinclair published THE JUNGLE, a scathing indictment of the meatpacking industry, which shocked the public. Because of THE JUNGLE and other investigations, Congress passed the Meat Inspection Act of 1906. The Act authorized the federal government to conduct inspection of meat plants for sanitation and cleanliness.

After years of investigations and civil and criminal suits, the government, in 1920, forced the "big five" meatpackers to sign a consent decree. "The consent decree's provisions were comprehensive and restrictive including, among others, that these packers would: (1) divest themselves of public stockyards, stockyard railroads, market newspapers and cold storage facilities; (2) not engage in retailing of meat and other commodities; and (3) submit to perpetual jurisdiction of the U.S. District Court."[3]

From 1920 until 1945 the beef industry experienced several wrenching shocks as did the rest of the nation's business thru the inter-war years. There was a severe depression after WWI and recovery was slow and then dashed by the crash of 1929. Livestock raisers were relatively well off during the inter-war years in relation to the rest of agriculture. Only during the worst years of the depression (193-34) did their revenues fall below the rest of agriculture.

Meatpacking remained under tight control and monitoring by the government. The meatpackers obtained some relief from the Consent Decree of 1920 when the U.S. Supreme Court modified it to allow them to retain their fleets of refrigerated trucks and railroad cars.

Profound changes in the industry after World War II and particularly during the 1960's would dramatically change the structure of the beef cattle industry.

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[3] Crom, P. 30.

CHAPTER 2 STRUCTURE

Analysis of the structure of an industry provides information about the number of sellers and buyers in the market; the number of firms; barriers to entry or exit; and horizontal and vertical integration.

The beef cattle industry is a business in which millions of producers funnel livestock through less than 1,000 processors for sale to millions of consumers. Figure B-2 shows a diagram of the industry from farm to consumer.

Standard Identification Codes, published by the Office of Management and Budget, are used to define various segments of economic activity within the United States. The four-digit codes which identify specific industries are used in this report for segmenting the beef cattle business.

RANCHING AND FARMING

Standard Identification Code #0212 identifies all establishments, except feedlots, primarily engaged in raising and feeding beef cattle. Table C-1 provides statistical data from the 1987 Census of Agriculture on this segment of the cattle industry.

Beef cattle raising in the United States involves more than 414 million acres of pasture and rangeland. In 1987 there were 643,831 farms and ranches raising and feeding over 45 million beef cattle. Most operations were small, averaging 643 acres in

size. Average herd size was about 34 with an average value per head of $340.

The number of business designated as ranches declined from 70,000 in 1945 to 60,000 by 1980. They only accounted for one-tenth of total American beef cattle production. The bulk of the beef-cattle comes from small farmers who own 50 head or less. "In American agriculture they are mixed farmers who hedge economically by diversifying."[4]

Producers at this stage grow most calves to a weight and age suitable for finishing and then sell them to feedlots. There is generally a separation of ownership between cattle-raising and feedlots. Cattle can use cellulose, which cannot be digested by humans, as feed. "Through cattle we use millions of acres of land that are too rocky, dry, wet, infertile, steep, or high for crop production."[5]

The beef cattle raising industry is a free market with many sellers and buyers. There is a trend toward fewer but smaller operations. Only 46,595 or 7.24% of producers had sales over $50,000 per year and they accounted for over 65% of beef cattle sales.

Increased capital requirements for land, machinery, and equipment is a major barrier to entry in the market. In addition, the risks associated with farming and ranching prevent entry into the market.

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[4] Skaggs, P. 177.

[5] Nelson, Kenneth E., THE CATTLE-BEEF SUBSECTOR IN THE UNITED STATES, USDA, Economic Research Service, February, 1984, p. 1.

FEEDLOTS

After World War II a new industry arose, the feedlot. Instead of being moved directly from the ranch or farm to the slaughter house, beef where transferred from the ranch to a feedlot. The feedlots fed cattle a high ration diet to improve the quality and weight of cattle before sale to a meatpacker. These feedlots, originally set up near meatpacking plants in the Midwest, slowly shifted to the beef raising regions.

Two major types of feedlots evolved: farmer feedlots and commercial feedlots. Farmer feedlots have a one time capacity of less than 1,000 head; are only one of several enterprises in a farm or firm; and generally feed only part of the year. Commercial feedlots have a capacity of more than 1,000 head and feed cattle year-round.

Feedlots primarily engage in the fattening of beef cattle in a confined area for at least 30 days, on their account or on a contract or fee basis. Feedlots are an integral part of the breeding, raising, and grazing of beef cattle and are classified by SIC #0211. Feedlots require little land. Major feedlot investments are a feeding facility, a feed storage facility and feed processing and delivery equipment.

The total number of feedlots in the United States decreased by 71.4% from 163,722 in 1962 to 46,883 in 1989 (Table C-2). However, the number of feedlots feeding more than 1,000-head increased by almost 29.7% for the same period. "The major

expansion can be seen in the construction and successful operation of large, over 16,000-head, and very large, up to 100,000-head, one-time capacity lots."[6] Scale of economies and tax shelters fostered the development of large feedlots. The number of fed cattle marketed doubled from 1960 to 1978. Since then the number of fed cattle marketed has fluctuated between 25 and 26 million head. The average dressed weight increased from 570 pounds in 1960 to 677 pounds in 1989.

During the 1980's a few very large lots provided most of the fed cattle (Table C-3). Almost 17% of the fed cattle were finished in 32 lots (0.07% of the total feedlots). One hundred and ninety-eight lots (.42% of the total) accounted for over 50% of the fed cattle marketed.

There are few barriers to entry for feedlots that market 1,000-fed cattle or less. But, for large scale lots, over 16,000-fed cattle, the cost of entry is much higher. The larger size lots profit from economies of scale in several areas--technical economies, i.e., internal economies and market exchange economies. Market exchange economies include:

1) entrepreneurial-management structure, including use of improved computer technology;

2) buying and selling economies;

3) custom feeding; and

4) financing.

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[6] Krause, Kenneth R., CATTLE FEEDING 1962-1989, USDA, Economic Research Service, April 1991, p. 13.

MEATPACKING

Meatpacking plants (SIC 2011) slaughter and process the beef for sale to either wholesale and retail grocers and hotel, restaurant, and institutional (HRI) trade. According to Mr. Skaggs in PRIME CUT approximately 54 percent of meatpacking plants specialize in beef, 27 percent in pork and 19 percent in lamb and mutton.

In the 1960's the rise of a new generation of meatpackers that set up their slaughterhouses in the cattle-raising areas shook the meatpacking industry. They built their plant in rural unindustrialized localities where wages and operating expenses were low. New participants, particularly Iowa Beef Packers which later became IBP, developed integrated slaughter and processing plants that reduced their costs of operation in relation to the older packers.

For reporting purposes, the Bureau of Census in the Department of Commerce does not consider producers who ship boxed beef to be meat packers under SIC 2011. The Bureau of Census lists them as wholesalers under SIC 5147.

The slaughter process produces primal and sub-primal cuts of beef and various byproducts--offal and bones; tallow, and hides. These byproducts find a ready market in animal feeds, especially pet foods, and in frankfurters and other processed meats. Tallow and hides are major export products for the industry.

Boxed Beef

The most dramatic development in meatpacking has been the introduction by IBP of boxed beef. Instead of shipping carcass to wholesalers and retailers, IBP cut the beef at the plant and shipped primal and sub-primal cuts in boxes. By 1980 IBP dominated America's boxed beef business, which accounted for half the nation's fresh-beef trade. According to a 1980 House Committee on Small Business, "the growth of the boxed beef industry has had a significant impact on the structure of the meat packing industry and the pricing and distribution systems in the wholesale beef markets."

Meatpacking Segments

The meatpacking industry has evolved into two subsets. One is the major slaughter and fabrication plants that specialize in a narrow range of beef (U.S. Choice and Select). They sell mainly boxed beef to medium and large supermarket chains. "The second subset of packers generally operates smaller plants, slaughters cattle of varying quality, and caters to the smaller, specialized market niches such as restaurants selling U.S. Prime beef, store handling lower-quality lean beef, and similar markets."[7] These two segments only compete indirectly, both buying live cattle and in the wholesale meat market.

[7] Marion, Bruce W., THE ORGANIZATION AND PERFORMANCE OF THE U.S. FOOD SYSTEM, Lexington Books, 1986, P. 128.

Concentration

The introduction of boxed beef changed the nature of meatpacker oligopoly from the original "Big Five" to a newer group of three firms. "The industry is dominated by three large companies: IBP, ConAgra and Excel (Cargill) that collectively slaughter about 60% of all steers and heifers in the U.S."[8] In 1988 these three firms had a 70% share of the beef packing market: IBP-32%, Con Agra 21% and Excel-17%.

The increase in four firm concentration percents (Figure B-3), particularly since 1979, shows the change in market share in meatpacking. The ratio for sale of carcass beef (steers & heifers) doubled from 35% to 70% from 1979 to 1989. For boxed beef it increased from 51% in 1979 to 79% in 1989. Only in the sale of carcass and products from cows & bulls has the four firm concentration remained low, rising from 10% in 1979 to 17% in 1989.

Economies of Scale

Economies of scale exist for beef slaughtering and processing plants that can kill 250,000 head per year while using two shifts versus a plant that slaughters less than 50,000 head. In boxed beef processing the economies of scale are somewhat

[8] U.S. House Committee of the Judiciary, Subcommittee on Monopolies and Commercial Law, "Mergers and Concentration: The Food Industries", Hearings May 11, 1988, p. 62.

greater, requiring a slaughtering capacity of 500,000 head per year. Some new boxed meatpacking plants have the capacity of slaughtering over a million head per year.

Barriers to Entry

There are several entry barriers in the meatpacking industry:

*high capital cost for an integrated slaughtering and processing plant ($20 to $40 million);

*economy of scale plants require the capability of purchasing many the cattle production in a given region; and

*excess capacity within the industry due to the continuing decline in per capita beef consumption.

Horizontal and Vertical Integration

One result of the shift to boxed beef was the decline in the number of meat packers through mergers, acquisitions or company's going out of business. ConAgra acquired Armour Foods, E.A Miller, Monfort of Colorado and 50% of Swift Independent/Valagri. Cargill purchases included Spencer Beef and Sterling Beef.

The total number of meatpacking firms that slaughter beef dropped by 10.8% from 1,350 in 1974 to 1,203 in 1989. For firms submitting annual reports to the USDA, Packers and Stockyard Administration (P&SA), the number of firms fell by 53.3% from 856 in 1974 to 400 in 1989. P&SA requires only firms with buying more than $500,000 in livestock a year to report to P&SA.

Besides integrating horizontally through mergers and acquisitions, the meatpacking industry is also integrating vertically. Both ConAgra and Cargill are operating cattle feedlots:

FEEDLOTS OWNED BY MEATPACKERS

Firm	# Feedlots	Capacity
ConAgra	4	304,000
Cargill	6	265,000
IBP, Inc.	0	0
National	1	50,000

Source: U.S. Congress, MERGERS AND CONCENTRATION: THE FOOD INDUSTRY, 1988, P. 15.

Both ConAgra and Cargill are slaughtering and merchandising the beef from some cattle that they fed in their lots. IBP instead of owning its own feedlots has entered contracts with two large multiple lot feedlot companies to provide a portion of the company's slaughter needs at some of its plants.

CHAPTER 3 CONDUCT

The conduct of an industry includes--buying practices of consumers; technology and research and development; pricing policies; management practices; labor relations; and government intervention (regulations, subsidies, etc.).

CONSUMPTION

Per capita beef consumption doubled from 1950 to 1976 reaching a peak of 88.9 pounds (Figure B-4). Since 1976 per capita beef consumption has steadily declined; in 1991 the average person consumed 63.4 pounds of beef, 43.4 pounds of pork and 72.4 pounds of poultry. In 1989 Americans spent an average of $3.89 per person per week on beef products. Consumer bought $21 billion in beef products in 1989; they spent $26.8 billion on fresh red meat and $244.9 billion for all food and beverages. As a percent food and beverage sales, beef dropped from 11.7% in 1979 to 8.6% in 1989.

The continuing decline in beef consumption is primarily due to the growing diet-health concerns of consumers. The U.S. population has become more health conscious about cholesterol and fat levels and their potential for causing health problems like cardiovascular disease. They are turning away from highly fat meat for both health and economic reasons.

The beef market is a mature and inelastic market concerning pricing. "A fundamental shift in the demand for beef occurred

from 1975 to 1979; both the own-price elasticity and income elasticity for beef dropped sharply."[9] Elasticity of demand measures the reaction of consumption to price. Consumers are less loyal and adjustments to supply do not always result in increases or decreases in price. If the price of beef gets to high, consumers will switch their purchase to another red meat, poultry or seafood.

TECHNOLOGY, RESEARCH AND DEVELOPMENT

Farms and Feedlots

"Livestock increasing are being raised in highly efficient, confined facilities. Automated feeding, watering, and milking systems have improved feed conversion rates and increased productivity, thus lowering unit production costs and freeing growers for other enterprises."[10]

Innovations in feed formulation have directly contributed to the growth of large-scale feedlots, which produce beef cattle more efficiently then fattening them on farms. There were also improvements in nutritional knowledge and the genetic characteristics of beef cattle. Improved methods of housing beef cattle, and the bulk formulation, mixing, transporting, and distribution of feeds also contributed to the rapid growth of the feedlot industry.

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[9] Marion, P. 124.
[10] USDA, 1990 FACT BOOK OF AGRICULTURE, 1991, P. 14.

Another technological change in the cattle raising and feeding segment was the introduction of the use of anabolic agents, hormones, artificial insemination, and vaccines. Feedlots also hired nutritionists and full-time veterinarians to improve the performance.

Hormones increase the cattle's metabolism by improving the use of nutrients absorbed from feed; they channel more of the nutrients into muscle (lean meat) then into fat. They can improve weight gain by 5 to 20 percent, feed efficiency by 5 to 12 percent, and lean meat growth by 15 to 25 percent.

The Food and Drug Administration (FDA) and USDA's Food Safety and Inspection Division (FSIS) regulate the use of hormones for animals. A time-release pellet containing hormone is inserted behind the animals ear allowing the hormone to enter the animal's system slowly.

Meatpackers

The big packers who had been at the leading edge of technology during the last half of the nineteenth century and the early part of the twentieth century became sluggish. New and more aggressive meatpackers developed better slaughter and fabrication methods. They combined slaughter and fabrication plants and developed boxed beef, dramatically changing the meatpacking industry.

Innovative architectural design and improved technology in methods and machinery--stunners, mechanical knives and hide

skinners, power saws, electronic slicing and weighing devices--caused major changes in how plants were designed. The old multistory facilities became obsolete. Meatpackers constructed new highly automated one-story facilities closer to the supply of beef.

Another major development was the introduction of boxed beef. Thirty years ago, packers shipped nearly all beef as forequarters and hindquarters. Meatpackers now cut over 80% of beef into primal and subprimal cuts, sealed in vacuum-packed bags, and shipped out in cardboard boxes.

"The advantages of boxed beef include:

*economics of size in assembly line techniques;

*less bone and fat shipped;

*allows buyer to order specific cuts

*product shrinkage is reduced;

*increases shelf life of product;

*fat and bone can be more efficiently salvaged; and

*product can be shipped and stored in less space."[11]

(Appendix A-3 describes the slaughering and processing of cattle into boxed beef in a new meatpacking plants.)

PRICING POLICIES

Farms and Feedlots

Beef cattle are usually bought and sold for immediate slaughter, further grazing, or placement in feedlots or breeding herds. There are four basic channels used by farmers and

[11] Nelson, P. 6.

feedlots to sell their livestock--terminal markets, auctions, direct sales and other sales through agents. Appendix A-4 provides a description of these different channels. Direct sales have become the most important exchange for marketing beef cattle.

Pricing of most feeder and slaughter cattle is on a live weight basis. The buyer makes a visual appraisal of the relative desirability of the livestock and bids or negotiates price. Some buyers purchases slaughter cattle on a carcass grade and weight basis; when the animal is slaughtered and the weight and quality grade are known the buyer and seller determine price. They determine the price from a scale of prices for carcass weights and grades. In 1965 the industry established a live cattle futures market to help stabilize the cash market and give live producers a market that would trend away from the wild swings of a cash market.

The beef cycle and consumer demand influence the prices paid for both calves and cattle. Price varied depending on grade--choice or select--and type beef--a steer, heifer, cow or bull.

Meatpackers

The price packers are willing to pay for fed cattle depends on the price they expect to receive in the wholesale meat market. The National Provisioner Yellow Sheet, a daily private price reporting publication, is the most heavily used source of price information on the wholesale market. Retail prices help

establish wholesale beef prices which "are determined by the interaction of the total beef supply in the market and the aggregate demand in the market."[12]
Quality of the beef and the reliability of delivery is of more concern to retail and wholesale buyers than short-term prices.

There are two pricing categories--formula and negotiated--for wholesale beef. Under formula pricing buyers and sellers negotiate a formula that includes a specified differential from a particular reported price (usually the National Provisioners Yellow Sheet) for a particular product on a given date close to the shipping date. In negotiated sales buyer and seller negotiate the price, product, and other terms of trade at the time of the sale. Most carcass beef is sold under formula pricing while most boxed beef sales are negotiated.

Prices Paid for Beef Cattle

Table C-4 shows a comparison of the prices received by farmers, feedlots and meatpackers for various grades of beef from 1982 to 1990. In 1990 farmers received $74.60 per 100 pounds for cattle and $95.60 per 100 pounds for calves. Feedlots accepted $77.40 per 100 pounds for Choice Steers, $75.23 per 100 pounds for Select steers, and $50.46 for cow beef. The wholesale price for boxed beef in 1990 was $123.21 per 100 pounds for Choice and $116.60 for Select; cow beef went for $99.96 per 100 pounds.

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[12] Crom, P. 9.

In 1990 the average retail price for a pound of beef was $2.81; the wholesale value was $1.90; and the farm value was $1.68. (The wholesale and farm values are equivalent to one pound of beef at retail, less by-product sales.) The spread from farm to retail was $1.13; from farm to wholesale $0.22, and from wholesale to retail $0.80.

Beef is sold to the following outlets:

OUTLET	PERCENT SALES
Chain grocery stores	26%
Independent grocery stores	36%
Fast-food outlets	13%
Restaurants	20%
Institutions (including DOD)	5%

Source: Crom, Richard J., "Economics of the U.S. Meat Industry", P. 19.

LABOR PRACTICES

Farms and Feedlots

"Most of the real cowboys I know, " says sixty-four-year-old Jim Miller, cow boss of the Fain Land & Cattle Co. of Arizona, "have been dead for a while."[13] In spite of the myth of the American cowboy as portrayed in countless movies and books, the job of cowboy is hard and dangerous; cowboys receive free room and board but low pay.

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[13] Blundell, William, "Life on the Job: Days of a Cowboy Are Marked by Danger, Drudgery, and Low Pay", WALL STREET JOURNAL, June 10, 1981, P. 1.

According to Mr. Skaggs in PRIME CUT, the ranching labor pool has been shrinking due to very low wages--about one-third the national average. As a result part time workers, mostly local youths, compose the biggest part of the work force. Small family run and operated farms raise the majority of beef cattle. According to USDA's 1990 FACT BOOK OF AGRICULTURE labor accounted for less than 8% of production expenses on beef cattle farms. The average hourly wage for a livestock worker in 1990 was $4.77.

Meatpackers

Labor is the single biggest cost in a meatpacking operation. Total employment in meatpacking decreased from 193,300 in 1965 to 139,500 in 1990 (Table C-5). The number of production workers fell from 149,100 to 117,700; but, as a percent of the work force, the number of production workers increased from 77.1% in 1965 to 84.4% in 1990.

In 1990 a production worker earned an average $8.73 per hour compared to $9.63 for workers in the food industry and $10.84 in manufacturing. Meatpacking production wage increases have not kept up with inflation, rising by 1.89% from 1988 to 1989 and by 1.16% from 1989 to 1990.

The meatpacking industry has a poor record for employee safety. In 1989 the injury rate for workers in the meatpacking industry was 35.1%--that is, more than one chance in three that a worker would be slightly injured, maimed, or even killed at work.

By comparison the average injury rate among steel workers is 26%; construction workers, 15.7%; miners 11.2%; and petroleum-refining workers, 5.4%.

During the mid-1980's the United Food and Commercial Workers (UFCW) ran a public relations campaign about the poor safety record in the meatpacking industry. As a result the federal Occupational Safety and Health Administration began [#Simplify.]a number of investigations into safety at meatpacking plants. Based on one investigation they levied a record $2.6 million fine in 1987 against IBP for not fully reporting the number of injuries at their plants.

Historically there has been conflict between management and labor in the meatpacking industry. Low wages and abysmal working conditions caused the workers to push for collective bargaining. The beginning of organized labor in meatpacking occurred with the formation of the Amalgamated Meat Cutters and Butcher Workman of North America in 1896. The fortune of the union went up and down during the early twentieth century as management would not recognize or bargain with the union.

Management only began to bargain with unions after the passage of the New Deal's National Labor Relations Act in 1935. By 1945 collective bargaining had been established throughout the industry with two major unions--Amalgamated and United Packinghouse Workers of America (UPWA)--representing workers. UPWA was the more radical of the two unions. In 1968 Amalgamated absorbed the UPWA and in 1979 Amalgamated joined with the Retail

Clerks' International Association to become the Untied Food and Commercial Workers International.

UPWA's biggest success came in 1956 when they struck Swift & Co. and won a "master agreement" granting a twenty-five cents an hour wage increase, a cost of living adjustment clause, a modified union shop and other concessions. All meatpackers soon signed the same agreement with the unions. In 1960 "the industry was dominated by a few companies using the union's 'master agreement', which provided wages and benefits generous by today's standards."[14]

The entrance of IBP into the industry dramatically changed labor relations. The company minimized its labor costs by locating in states that under the Taft-Hartley Act (1947) had outlawed union shops. They were able to bypass the "master agreement". "While often paying its employees the highest average wages in the industry, IBP steadfastly refused to grant many costly fringe benefits demanded by the unions, a sore point with workers that repeatedly led to violence-punctuated strikes and, consequently, to open hiring by the company."[15]

To stay competitive other meatpackers followed IBP's union-busting tactics leading to many strikes during the 1980's. "Meatpacking workers in the eighties faced a turbulent industry, with new anti-union firms undermining established companies, many of which were shuffled around in the paper chase of making and

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[14] Shellenbarger, Sue, "Iowa Beef's Effort to Slash Labor Costs at Strike Site May Speed Industry Trend", WALL STREET JOURNAL, August 6, 1982, P. 22.
[15] Skaggs, P. 193.

unmaking conglomerates."[16] Some companies obtained wage concessions from the UFCW; others closed plants and then reopened them under new management and renounced previous labor agreements. In 1983 Wilson Foods entered Chapter 11 in 1983 to cancel its labor contracts; they then cut wages by as much as 50%.

Although the UFCW's national leadership was willing to make concessions to management to keep plants open, many locals were more aggressive. One of the most bitter strikes of the 1980's was by UFCW Local P-9 against Hormel in Austin, Minnesota. After more than a year long battle, the UFCW took over the local and negotiated a new contract with Hormel.

GOVERNMENT INTERVENTION

Government agriculture policy plays a major role in the industry. Government payments to the beef cattle sector amounted to over $751 million in 1987. Federal and State regulations concerning food and feed additives, food labeling, meat inspection, import quotas, animal diseases, taxes, and business practices all impact on how the beef cattle industry operates. Other government actions include price reporting, livestock and meat grading, and collecting and reporting statistics on the industry.

[16] Green, Hardy, ON STRIKE AT HORMEL, Temple University Press, 1990, P. xii.

Agriculture Policies and Agencies

The U.S. and State Governments administer many agricultural programs that affect the beef cattle industry. Some major programs are:

1) Leasing of grazing rights to federal grassland by the Department of the Interior. In 1987 over 36,000 farms had obtained grazing permits.

2) Government subsidy and support programs for feed grains directly affect the feed prices paid by farmers and feedlots. Feed costs account for 45% to 70% of cash expenses.

3) Implementation of the Dairy Termination Program, authorized by the Food Security Act of 1985. The bill allowed dairy farmers to sell for slaughter their herds to reduce the total number of dairy cattle in the country. This resulted in a drop in the price paid for beef over a short period.

4) Farm credit policies established through the Farm Credit System and the Commodity Credit Corporation. These policies determine the ability of beef cattle raisers and feedlots to obtain credit for operations and capital purchases.

5) Support of exports through the Export Enhancement Program (EEP) and the Targeted Export Assistance (TEA) Program. These

programs promote the export of various U.S. agricultural products, including beef cattle.

6) Subsidized federal water supply contracts, particularly in the West. The current drought in California and concerns about the environment could result in a change in policy that would impact the price of water, which would affect feed and other costs to the beef cattle rancher.

7) Protection of the health of the nation's livestock. The Veterinary Service of USDA's Animal and Plant Health Inspection Service, which is responsible for protecting the health the Nation's livestock, poultry, and other animals. The Veterinary Service works to eradicate livestock diseases and to keep out dangerous diseases from other countries.

8) Providing feed assistance to livestock producers in emergencies caused by natural disasters.

Packers and Stockyard Administration

In 1921 Congress passed the Packers and Stockyards Act (P&S) to regulate marketing practices in the livestock, poultry, and meat industries. The law prohibits unfair, deceptive, discriminatory, and monopolistic trade practices. The USDA's Packers and Stockyard Administration (P&SA) is responsible for enforcing the P&S Act. All slaughtering packers operating in the

United States who buy more than $500,000 in livestock annually are subject to the law and to make annual reports to P&SA.

Meat Inspection and Grading

Government programs have long played a role in beef grading and health and sanitation inspections.

Originally promulgated in 1926, USDA revised the beef-grading standards in 1939 and 1950. The quality grades for beef are Prime, Choice, Select, Standard, Utility, Cutter and Canner. USDA bases its grading system on maturity of the animal, the amount of marbling and other palatability characteristics. Meatpackers pay a fee for the USDA's meat grading and certification program.

USDA's Food Safety and Inspection Service (FSIS) is responsible for ensuring that meat moved in interstate commerce for human consumption is safe. Over 7,800 food inspectors and veterinarians inspect 6,500 privately owned meat and poultry plants. FSIS also reviews and monitors foreign inspection systems to ensure they are equal to the U.S. system.

USDA has proposed a new mandatory labeling system for all processed meats and poultry. Labeling for raw products would be voluntary. The label will show total calories, fates, cholesterol, carbohydrates, protein, sugar, fiber, sodium, vitamins, calcium and iron per serving. The proposed change to the Federal Meat and Poultry regulations will take effect in May 1993.

CHAPTER 4 PERFORMANCE

TRENDS IN SALES

Consumer demand, which has been declining, drives sales in the beef cattle industry. Total beef sales in 1991 were $45.3 billion. Sales rose by 5.15% from 1989 to 1990 and dropped 3.15% from 1990 to 1991 (Table C-6). But, in constant 1987 dollars the percentage growth rates were -4.32% and 2.27% respectively.

Another critical statistic in judging beef cattle sales is meat production as measured by the number of pounds of cattle slaughtered commercially (Table C-5). The number slaughtered fell by -1% from 1975 to 1985, -0.58% from 1985 to 1988 and -1.40% from 1988 to 1991.

PROFITABILITY

Farms and Feedlots

As Mr. Skaggs in PRIME CUT states, while retail meat prices have soared spectacularly since World War II, neither livestock raiser nor meatpacker has reaped remarkable profits. A wide range of factors--sales, cost for feed, consumer demand, exports, etc.--affect prices. An enterprise such a cow-calf unit continues to operate when variable cash expenses are covered.

Cattle raisers and feedlots swing between profitable and non-profitable periods throughout the cattle cycle. A review of

the USDA's AGRICULTURAL STATISTICS 1990, (Table C-6) shows that gross income for beef cattle farmers and feedlots declined in 1985 and 1986 because of the influx of additional cattle from the Dairy Termination Program; but jumped dramatically in 1987 when the program ended. In 1988 gross income grew by 4.64% and in 1989 by 1.2%.

According to the 1987 CENSUS OF AGRICULTURE, net cash income for beef cattle raisers and feedlots was $4.6 billion. Feedlots (SIC 0211) made $1.6 billion in net cash income and all other beef cattle raisers (SIC 0212) made $3.0 billion.

Meatpackers

"During the 1980's profit rates in meat packing did not increase alongside industry concentration."[17] With average net earnings of 1.22% meatpacking is one of the lowest profit industries in the food manufacturing industry. Based upon a survey of the meat industry by the American Meat Institute, the net earnings for a firm that specialized in beef cattle slaughter averaged 0.16% in 1989 (Table C-8).

An analysis (Table C-9) of the Consolidated Operating Statement for IBP the period 1987 to 1989 confirms the low net earning levels of meatpackers. IBP's Net income was 0.88% of sales in 1987, 0.69% in 1988 and 0.39% in 1989. Net income fell from $67.9 million in 1987 to $62.3 million in 1988, an 8.18% decline; it plummeted in 1989 to $35,325, a 76.44% drop from 1988.

[17] "Mergers and Concentration: The Food Industries", P. 79.

Net returns to meatpackers for beef carcass shipments averaged $59.37 per 100 pounds for retail beef; returns for boxed beef averaged $66.93.

PRODUCTIVITY

According to Kenneth E. Nelson in THE CATTLE-BEEF SUBSECTOR IN THE UNITED STATES, productivity for meat animals increased by 118% between 1967 and 1980, an average growth rate of 9.1% a year. During the 1980's productivity dropped to approximately 6% a year. The productivity gains resulted from technological innovation and the growth of the feedlots.

The dramatic changes in meatpacking from introduction of new plant design and boxed beef increased labor productivity from 1960 to 1980 (Table C-5). Red meat output (in pounds) per production worker rose by 9.85% from 1965 to 1975 and by 14.5% from 1975 to 1985. From 1985 to 1988 productivity only grew 1.2% and since 1988 it has been flat.

EXPORT COMPETITIVENESS

The United States' 24% share of the world beef production makes it the largest beef producer in the world. The Soviet Union produces 19%, EC-12 17%, Argentia 6%, Brazil 6%, Australia 3% and Canada 2%. The rest of the world produces the remaining 23%.

The Meat Import Act, passed in 1963 and revised in 1979, mandates quotas whenever red-meat imports exceed targeted levels. The Meat Import Act is countercyclical--it set import quotas proportionally higher when U.S. production is in the low position of its cycle, and lower when U.S. production is higher. Still, enforcement of the act has been spotty.

The U.S. is a net importer of fresh beef (Table C-10). Imports rose during the first part of 1980 and then stabilized around 9% to 10% of U.S. production. The U.S. has a growing export ratio (exports divided by total production) that jumped from .98% in 1981 to 4.38% in 1990.

The U.S. is also a net importer of live beef cattle. Imports have steadily increased from 1985, rising from $238.8 million to $562.6 million in 1989. Exports of live animals dropped from $106 million in 1985 to $98.9 million in 1987; then exports rose to $152.1 million by 1989.

According to Kenneth Nelson in THE BEEF-CATTLE SUBSECTOR IN THE UNITED STATES, variety meats and byproducts, such as tallow and hides, are the most important components of exports. They accounted for 65.1% of the $3.7 billion beef exports in 1990.

CHAPTER 5 RELATION TO DEFENSE AND MOBILIZATION

SALES TO DEPARTMENT OF DEFENSE

The Department of Defense (DOD) is a very small player in the beef cattle market. In 1989 DOD purchased $133 million in beef products for troop feeding and $181 million for resale through 241 military commissaries. This accounted for less than 0.71% of total beef cattle sales for 1989. There will be little or no impact on the beef cattle industry from the proposed defense cutbacks. However, the impact the beef industry can have on mobilization merits review.

MOBILIZATION AND SURGE POTENTIAL

"Most economic theorists of war seem to have agreed on the fact that food is a good of unique strategic significance. Agriculture has always been considered a· a sector of the economy having a special importance in wartime, and food is seldom treated as a commodity like any other commodity."[18]

Food production, processing, transportation, storage and distribution systems are critical parts of our nation's economy and its national security. Food is a crucial material during war and many wars have been loss due to the lack of food for a country's citizens and soldiers.

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[18] Milward, Alan S., WAR, ECONOMY AND SOCIETY 1939-1945, University of California Press, 1979, P. 244-245.

The beef cattle industry is an integral part of our food system and would be a vital resource during any extended conflict or war. The industry can meet the demands of a regional conflict such as the Iraq war without any disruption of sales and distribution to the public.

But, for a prolonged war the industry would require time to expand herds due to the cattle cycle. According to the Federal Emergency Management Agency (FEMA) stocks of beef, pork and poultry are usually very small, commonly less than 2% of total production. "An interruption of the slaughter and processing of meat animals at any particular time would mean that about one week's supply of meat, given normal consumption levels, would be available."[19]

If there was a complete mobilization of the nation for a protracted war beef would be rationed as it was during World War II. Depending upon where the industry was in the "Beef Cycle", it could take up to three to five years to build the herds enough to meet the increased demand.

USDA would become involved in national defense in preparation, conduct and post war efforts. According to EMERGENCY FOOD DELIVERY: A STATE-OF-THE-ART ASSESSMENT their responsibilities relating to the food and beef cattle industry include:

1) Food resources, seed, livestock and poultry feed, fertilizer, farm equipment, and food resource facilities;

[19] Bjornstad, David J., Baxter, F. Paul, & Gutmanis, Ivars, EMERGENCY FOOD DELIVERY: A STATE-OF-THE-ART ASSESSMENT, Oak Ridge National Labratory, 11987, P. 2-15.

2) Lands under the jurisdiction of the Secretary of Agriculture, including grazing land; and

3) Water to be used in agricultural production and food processing.

In a nuclear attack or protracted war, USDA would be responsible for coordinating the production, processing, distribution and rationing of beef cattle products. An area of special concern in a nuclear war would be the effect of irradiation on cattle and other livestock. There are many unanswered questions in this area: when should livestock be butchered; what parts can be eaten; how should meat be prepared; and how should it be stored?

Other related long term questions in any conflict include how much feed should be allocated to animal production if there are shortages for the population; who would be responsible for certification of the safety of the meat; and how would the livestock products be stored and distributed? While not addressed directly in this report, these issues point out the need for increased planning between by DOD, FEMA and USDA.

CHAPTER 6 TRENDS AND OPPORTUNITIES

Emerging biotechnology and information system developments will have the greatest impact on the changing structure and nature of agriculture, including the beef cattle industry, during the next 20 years. Many factors will determine how these new technologies will be used by the beef cattle industry: projected gains in product yield; cost and technical sophistication; profitability; federal regulations and approval of new technologies; macroeconomic environment; and projected productivity increases. For meatpackers, for example, improvements in economically preparing and packaging retail cuts of meat at the meatpacking plant would allow the greatest potential for improved manufacturing during the next decade.

BIOTECHNOLOGY

"Biotechnology will be one of the important advances moving society into the high technology era. It will have a tremendous impact on crops and animals, affecting agriculture in ways never deemed possible."[20]

Biotechnology includes any technique that uses living organisms or processes to make or modify products, to improve plants or animals, or to develop micro-organisms for specific uses. Areas where biotechnology will change the beef cattle

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[20] Phillips, Michael J., "Biotechnology: A New Frontier for Agriculture", POSITIONING AGRICULTURE FOR THE 1990s: A NEW DECADE OF CHANGE, National Planning Association, 1988, P. 45

industry include: animal genetic engineering; animal reproduction; regulation of growth and development; animal nutrition; disease control; pest control and crop residues and animal waste use.

Production of Protein

A major area of research in biotechnology is the mass production of micro-organisms of protein-like pharmaceuticals, including several hormones, enzymes, activating factors, ammio acids, and feed supplements. Some of these products can be used for detection, treatment and prevention of infectious diseases. Others can be used to increase animal production efficiency.

Gene Insertion And Genetic Engineering

A technique, arising from the combination of gene and embryo manipulations, will allow genes for new traits to be inserted into the reproductive cells of beef cattle and other livestock. This will lead to improvements in animal health and productivity. Future beef cattle can be permanently endowed with traits of other animals. Scientist are focusing their research of growth, feed efficiency, fat and lean carcass composition, and disease control.

The rate and composition of growth is a critical factor in determining the cost of producing livestock products. Genetic engineering, cloning, and immunology will provide ways to improve the rate and composition of growth. They could help develop new

products that alter the inherent mechanisms of muscle protein and fat tissue accretion to improve the conversion of more nutrients into lean meat. Eventually, cattle resistance to such diseases as Anthrax could be developed.

Embryo Transfer

Embryo transfer consists of artificially inseminating a super-ovulated donor animal (an animal injected with a hormone to stimulate production of more than one egg per ovulation). The resulting embryos are removed nonsurgically and implemented in surrogate mothers, which carry them to term. The resultant embryos can be sexed, split to make twins, fused with embryos of other animal species or frozen for storage.

Animal Nutrition

"Food animals provide 70 percent of the protein, 35 percent of the energy, 80 percent of the calcium, 60 percent of the phosphorous, and significant portions of the vitamins and mineral elements in the average human diet in the United States."[21] The success of the livestock industry, including beef cattle, will depend on the industry's adoption of new technology in response to consumers concerns about costs, health, esthetics, and convenience.

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[21] U.S. Congress, Office of Technolgy Assessment, TECHNOLOGY, PUBLIC POLICY, AND THE CHANGING STRUTURE OF AMERICAN AGRICULTURE, 1986, P39.

Research in animal nutrition could result in major advances in many areas: 1) relation of animal product consumption to human health; 2) changes in the amount, nature and type of animal fat; and 3) alimentary tract microbiology and digestive physiology. In other words - a safer healthy product to eat, enjoy and fortify us in our daily work.

ALTERNATIVE AGRICULTURE

Alternative agriculture is the idea of using fewer chemicals in agriculture and is closely tied to success in the biotechnology field. According to the Congressional Office of Technology Assessment, switching away from the use of various chemicals in agriculture would result in an increase in the cost of feed grains. Reduce yield would increase feed cost causing a rise in the prices of livestock, particularly beef cattle. The scientific knowledge, technology and management skills necessary to implement alternative agriculture fully are not available. Alternative agricultural proposals are not seen as a major force influencing the beef cattle industry.

INFORMATION TECHNOLOGY

Information technology is the use of computer- and electronic- based technologies for the automated collection, manipulation, and processing of information for control and management of agriculture production and control.

Used for year by wildlife researchers, electronic animal identification systems provides farmers the ability to identify and track beef cattle. The combination of animal identification and computer systems can improve record keeping, individualized feed control, genetic improvement and disease control.

New information technology will affect reproduction and genetic improvements. The system will allow: animals to be rebred faster after weaning; animals who did not breed to be culled from the herd; breeding can be done faster; and easier embryo transplants.

Finally, information technology will improve herd record keeping. The farmer will be able to track production, feed consumption, vaccination profiles, breeding records, conception dates, number of offspring, listing and dates of diseases, and costs of treatment. This will result in greater productivity an lower operating costs.

CHAPTER 7 INTERNATIONAL TRADE AND COMPETITION

"As has been the case throughout the twentieth century, the United States continues to be a net importer of both live cattle and fresh beef."[22]

According to USDA's 1990 FACT BOOK, the U.S. is a top exporter of agriculture products, with a total share of world trade averaging about 15% in recent years. But, the U.S. food industry is home-marketed oriented, exporting less than 4% of domestic production. This compares to other developed nations who export from 1[illegible]% to 70% of their food production. The U.S. generally exports low value-added processed foods--fats & oils, grain mill products, meat, poultry and fish. It imports more high-value added food products.

Agriculture is a major item of the Uruguay Round of the multilateral trade negotiations under the General Agreement on Tariffs and Trade (GATT). In July 1987 "to the surprise of other participants, the United States made bold opening gambit on agriculture by proposing the elimination of all agricultural subsidies by the year 2000."[23] The European Community (EC) counte ed with a proposal for short-term measures to improve conditions in international markets but made no long term commitments to reform. Although Japan has eased some of her restriction on agricultural imports, there are still many in

[22] Skaggs, P. 214.

[23] Blandford, David, "U.S. Trade Policy and the GATT", AGRICULTURAL POLICIES IN A NEW DECADE, National Center for Food and Agricultural Policy, 1990, P. 297.

place, including a complete restriction against the import of rice. Beef imports and exports have been an area of contention between the U.S. and both the EC and Japan.

JAPAN AND THE PACIFIC RIM

The U.S. expects to continue the growth of exports in beef and other meat products it has experienced in the past couple of years. "Much of the export growth is due to the opening of new markets in the increasingly affluent countries of the Pacific Basin."[24]

Before 1984, Japan restricted through quotas the importation of high-quality American beef to 30,800 metric tons. In 1984 Japan agreed to increase the quota by 6,900 metric tons a year for four years.

In 1988 Japan agreed to further market opening measures for twelve categories of agricultural products, including beef and citrus. These efforts transformed Japan into the top foreign market for U.S. beef. Beef exports to Japan are expected to continue to grow, though at a slower rate than in the period 1988 to 1990.

Following is a breakdown of U.S. beef exports to Japan for 1988 to 1990:

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[24] U.S. AGRICULTURAL TRADE GOALS AND STRATEGY REPORT, 1991, Messeage from the President of the United States, October 26, 1990, P. 47.

U.S. BEEF EXPORTS TO JAPAN

(MIL $)	1988	1989	1990	Total
Fresh Beef	$811.6	$1,002.0	$951.4	$2,765.0
Var. Beef	$176.7	$209.3	$211.3	$597.3
Hide	$416.1	$353.2	$411.6	$1,180.9
Total	$1,404.4	$1,564.5	$1,574.3	

SOURCE: 1991 MEAT FACTS, American Meat Institute, P. 58.

As can be seen, overall beef exports to Japan grew at a slow rate between 1988 and 1990.

The U.S. is working to duplicate its success with Japan in South Korea. President Bush in his message to Congress on U.S. AGRICULTURAL TRADE GOALS AND STRATEGY REPCRT, 1991, predicted that South Korea will liberalize its beef import market by 2001. Besides negotiations at the Uruguay Rounds, the U.S. is conducting some bilateral negotiations aimed at opening new markets for U.S. beef, especially in the dynamic economies of the Pacific Rim.

EUROPEAN COMMUNITY

During recent years there has been an increase in agricultural commercial tensions between the U.S. and EC. This is due to the increasing productivity of both agricultural systems and the penetration of EC products into traditional U.S. markets. Beef has become a major problem in this confrontation.

Beef Production in Europe

"Beef is the most important product of the meat subsector and represents the second largest production in the EC behind milk."[25] According to USDA's A COMPARISON OF AGRICULTURE IN THE UNITED STATES AND THE EUROPEAN COMMUNITY, in 1985 cattle and calve production accounted for 14.1% of total EC agricultural production versus 20.2% in the United States.

The EC maintains beef price supports by intervention purchases. The EC also provides export subsidies (refunds) for cattle, calves, beef, and veal as needed to offset differences between EC and world prices. In 1988 the EC spent $3.2 billion in export refunds, intervention purchases and storage to maintain price levels for beef and veal. To limit imports, the EC imposes variable levies on imports of beef, veal and live animals. These levies are the difference between the guide and import prices plus customs duty.

Unlike the United States, the European Community is a net exporter of beef (Table C-10). In 1989 their export exceeded imports by 800 million pounds. In addition, exports comprised 30.63% of total production in 1989; this compared to 4.38% for the U.S.

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[25] Navarrete, Donato and Alvarez, Antonio, "The Common Agricultural Policy: Meaning and Functioning of Institutional and Market Mechanisms", AGRARIAN POLICIES & AGRICULTURE SYSTEMS, Bonanno, Alessandro ed., Westview Press, 1990, P. 135.

Hormones, the U.S. and the EC

The European Community banned the use of non-therapeutic hormones in the Community's livestock in April 1988. In January 1989 they expanded the ban to cover the importation of animals treated with growth hormones. The EC considered its ban on livestock hormones an internal production decision, driven by public concern about the safety of hormones.

Since the use of anabolic agents in livestock in the U.S. is widespread, the EC ban directly affected U.S. shipment of beef products to the EC. The U.S. stated it could not meet the certification requirements under the ban because testing procedures are prohibitively expensive. The U.S. also claimed that the ban was an unfair trading practice because it was not based upon scientific evidence.

In retaliation the U.S. imposed a 100 percent tariff on a select group of agriculture products whose export value to the EC would approximate the estimated $100 million loss to the U.S. The U.S. placed tariffs on boneless beef products, hams and pork shoulders (not cooked or boned, and not in airtight containers, instant coffee, wine coolers, preserved tomatoes, and fruit juices. In addition, Congress directed DOD to stop buying beef for commissaries located in Europe from the EC. Congress directed the commissary systems to ship U.S. beef to the commissaries in Europe.

"The hormone dispute threatened to erupt into an expensive trade war and disrupt the GATT negotiations, among other

things."[26] In mid-February 1989 the U.S. and the EC agreed to a 75 day cooling off period and created a joint task force to find a solution to the hormone problem. By May they had come up with an interim measure and agreed to continue to meet indefinitely.

The EC agreed to establish a certification system that would generate a list of U.S. producers who would qualify to export beef to the EC. The FSIS insured that beef exported to the EC came from certified producers. The U.S. retaliation against EC products would be reduced on an annualized basis in the amount of beef or beef products shipped to the EC under the interim agreement. The task force would continue to explore means of allowing export of U.S. beef offal to the EC. Fresh U.S. beef exports to the EC dropped by 62.5% from 1988 to 1989 because of the ban.

Although beef is only a small portion of the overall trade between the U.S. and the EC, the hormone problem represents a major trade issue to the U.S. The beef hormone issue continues to plague trade relations between the U.S. and EC. In the summer of 1991 the EC agreed to send a team of veterinarians to reinspect U.S. meat plants that the EC removed from the certification list in 1990. But, the American Meat Institute claims that the EC must reassess its unfair trade practices. They are pressing a claim under Section 301. This is a broad-scale trade law giving U.S. representative authority to retaliate against unreasonable or unjustified foreign trade practices.

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[26] WESTERN EUROPE, AGRICLTURE AND TRADE REPORT, USDA, 1989, P. 25.

CHAPTER 8 CONCLUSION AND RECOMMENDATIONS

CONCLUSION

> **"Thus the history of livestock raising and meatpacking in the United States from colonial times to the present is more than merely the romantic of big-pasture ranchers and a few giant meatpackers. It is also the story of small farmers and large, of big business and small, of continuous technological innovation, of changing consumer tastes and preferences of labor's ongoing struggle with management, and of government assistance to private enterprise and, necessarily, government restraint as well."[27]**

Hundred of thousands of livestock raisers, tens of thousands feedlots, a little over one thousand meatpackers, and millions of consumers make up the beef cattle industry. Beef shipments account for the single largest share, 7.2%, of total food and beverage industry shipments. But, consumer consumption of beef products has been on the decline for the last decade.

During the past ten years there have been some major changes in the beef cattle industry. The number of farms, feedlots and meatpackers involved in the beef cattle industry declined. Meatpackers have been integrating both horizontally and vertically.

Since 1908 there has been a decline in the number of pounds of beef cattle slaughtered. Profit levels for both livestock raisers, feedlots and meatpackers have fluctuated based on the cattle supply. They have not kept pace with the retail price

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[27] Skaggs, P. 10.

increases at the grocery store. Productivity growth remained flat.

The good news is that the exports have grown. The U.S. narrowly avoided a major trade war with the European Community over their ban of the importation of beef treated containing growth hormones. Japan has become the biggest importer of U.S. fresh and frozen beef.

The beef cattle business is a mature industry with a flat growth rate. Due to changes in consumer habits and tastes domestic demand will continue to decline during the rest of the decade. As turmoil continues in all segments of the industry from the fall in demand for beef, the future of the industry looks bleak.

RECOMMENDATIONS

There are several actions the beef cattle industry can take to improve performance.

Coordination

First, the industry needs to do a better job of coordination among the various subsectors. Cattle may be held for market for to long or short a period, sold at the wrong time, transported several times, and priced inaccurately. "Perhaps the greatest opportunities for improved performance lie in the categories of short-run and long-run coordination among firms and stages of the

subsector. Coordinating output over the long-run could help all stages of the industry."[28]

International Trade

With the decline in domestic consumption of beef, the industry must look to the export market for sales growth. There is considerable potential for expanding exports to other nations, particularly the growing economic powers of the Pacific Rim. The U.S. government can assist the beef cattle industry by successfully completing the current Uruguay Round of GATT negotiations on agriculture and other trade issues.

Biotechnology and Information Systems

The innovation in the fields of biotechnology and information systems offer the opportunity for the livestock raising and feedlot segments to reduce cost and improve productivity. In biotechnology there are great opportunities in gene insertion and genetic engineering; embryo transfer; animal nutrition; and disease and pest control. Improvements to information systems will help in developing better historical records for each animal, breeding information, electronic identification, and medical history.

[28] Nelson, P. 19.

Value Added Products

Meatpackers need to move away from commodity products into branded and other value-added items. Moving the preparation of retail cuts from the grocery store to the meatpacker will improve both production and distribution efficiencies. The industry needs to follow the lead of the poultry industry in developing and marketing branded products. Vacuum packed retail cuts prepared at the meatpackers will reduce waste; cut costs for the retailer; and improve returns to the meatpacker, since returns are higher for value added products then for commodities. Accomplishing this will require convincing both the retailer and consumer that pre-packaged beef is a better product and value.

CHAPTER 9 ISSUES FOR FURTHER STUDY

This report has provided a descriptive analysis of the structure, conduct and performance of the U.S. beef cattle industry. Given this foundation, further research is recommended:

STRATEGIC ISSUES

1) Determination of the effect of full mobilization on the beef cattle industry;

2) The impact of nuclear contamination on beef cattle through studying Chernobyl's impact on the cattle and dairy industries in Russia, Ukraine and Moldova.

GENERAL ISSUES

1) The potential impact of biotechnology on the productivity of beef cattle industry;

2) The technological and marketing requirements to develop and market branded beef products;

3) The impact of "alternative agricultural" policies on the beef cattle industry;

4) Determination of ways to reduce the fat content and improve the nutritional value of beef products;

5) The impact of cattle farms, ranches and feedlots on the environment; and

6) Development of ways to improve coordination among the various subsectors of the beef cattle industry.

BIBLIOGRAPHY

U. S. DEPARTMENT OF AGRICULTURE PUBLICATIONS

AGRICULTURAL-FOOD POLICY REVIEW, Economic, Statistical and Cooperatives Service, National Economic Division, U. S. Department of Agriculture, Washington, D. C. 1989

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE, USDA, November 1989

"Livestock and Poultry: Outlook & Situation", Economic Research Service, U. S. Department of Agriculture, Washington, D. C.

Boykin, Calvin C., "Structural Characteristics of Beef Cattle Raising in the United States", (Agricultural Economic Report No. 450), Economic, Statistical and Cooperatives Service, National Economic Division, U. S. Department of Agriculture, Washington, D. C. 1980

Cron, Richard J. "Economics of the U.S. Meat Industry", Economic Research Service, U. S. Department of Agriculture, Washington, D. C. November 1988

DESK REFERENCE GUIDE TO U.S. AGRICULTURAL TRADE, U.S. Department of Agriculture, Foreign Agricultural Service, January 1989

Gilliam, Henry C., "The U. S. Beef Cow-calf Industry", Economic Research Service, U. S. Department of Agriculture, Washington, D. C. September 1984,

Nelson, Kenneth E. "The Cattle-Beef Subsector in the United States: A Brief Overview", AGES-840106, Economic Research Service, U. S. Department of Agriculture, Washington, D. C. March 1984

Newman, Mark, Fulton, Tom and Glaser, Lewrene, A COMPARISON OF AGRICULTURE IN THE UNITED STATES AND THE EUROPEAN COMMUNITY, Economic Research Service, U. S. Department of Agriculture, Washington, D. C., October 1987

1990 AGRICULTURE CHARTBOOK, U. S. Department of Agriculture, Washington, D. C. 1990

WESTERN EUROPE, AGRICULTURE AND TRADE REPORT, Economic Research Service, U. S. Department of Agriculture, Washington, D. C., July 1989

GAO REPORT

"Beef Procured for Commissaries", GAO/NSIAD-91-100 FEB 91

CONGRESSIONAL REPORTS

United States House Committee on Agriculture, Subcommittee on Livestock, Dairy and Poultry. "Effect of the Food Security Act of 1985 on the Domestic Livestock, Dairy and Poultry Industries", Hearing Sep 3, 1987,

United States House Joint Economic Committee. "The Future of the American Cattle Industry", Hearing 31 Mar 1986

United States House Committee of the Judiciary, Subcommittee on Monopolies and Commercial Law. "Mergers and Concentration: The Food Industries", Hearing 11 May 1988

U.S. Congress, House Committee on Small Business, "Small Business Problems in Marketing of Meat and Other Commodities: Monopoly Effects on Producers and Consumers", (96the Congress, 2d Sess., 1980)

U.S. Congress, Joint Economic Committee, "Alternative Agriculture: Perspectives of the National Academy of Sciences and the Council for Agricultural Sciences and Technology", (100the Congress, 2d Sess., June 6, 1990)

U.S. Congress, Office of Technology Assessment, TECHNOLOGY, PUBLIC POLICY, AND THE CHANGING STRUCTURE OF AMERICAN AGRICULTURE, Congress of the United States, Office of Technology Assessment, 1986

OTHER GOVERNMENT REPORTS

1987 CENSUS OF AGRICULTURE, Volume 1 (Part 1) and Volume 3 (Part 2), U.S. Department of Commerce, Bureau of Census

Message from the President of the United States, U.S. AGRICULTURAL TRADE GOALS AND STRATEGY REPORT, 1991, U.S. Government Printing Office, 1990

BOOKS

Allen, Kristen (ed), AGRICULTURAL POLICIES IN A NEW DECADE, National Planning Association, 1990

American Meat Institute, 1991 MEAT FACTS, 1991

Bjornstad, David J., Baxter, F. Paul, and Gutmanis, Ivars, EMERGENCY FOOD DELIVERY: A STATE-OF-THE-ART ASSESSMENT, Oak Ridge National Laboratory, 1987

Bonanno, Alessandro (ed.), AGRARIAN POLICIES & AGRICULTURAL SYSTEMS, Westview Press, 1990

Browne, William P., PRIVATE INTERESTS, PUBLIC POLICY, AND AMERICAN AGRICULTURE, University Press of Kansas, 1988.

Conner, John M., FOOD PROCESSING, Lexington Books, 1988

Green, Hardy, ON STRIKE AT HORMEL: THE STRUGGLE FOR A DEMOCRATIC LABOR MOVEMENT, Temple University Press, 1990, ISBN 0-87722-635-0

Milward, Alan S. WAR, ECONOMY AND SOCIETY 1939-1945, University of California Press, 1979.

Mueller, W.F. & Marion, B. W., THE ORGANIZATION AND PERFORMANCE OF THE U.S. FOOD SYSTEM, Lexington Books, 1985

National Planning Association, POSITIONING AGRICULTURE FOR THE 1990S: A NEW DECADE OF CHANGE, National Planning Association, 1989

Skaggs, Jimmy M., PRIME CUT: LIVESTOCK RAISING AND MEATPACKING IN THE UNITED STATES, 1607-1983, Texas A&M University Press, 1986

MAGAZINES

Baldo, Anthony, "Boxed In", FINANCIAL WORLD, Mar 21, 1989

Blundell, William, "Life on the Job: The Days of a Cowboy Are Marked by Danger Drudgery, and Low Pay", WALL STREET JOURNAL, June 10, 1981.

Chavas, Jean-Paul, "Structural Change in the Demand for Meat", AMERICAN JOURNAL OF AGRICULTURAL ECONOMICS, 65:148-153

Grueff, Jim and Bylenga, Sharon, "Harmonizing Food Safety and Other Health-Related regulations for Agricultural Trade", NATIONAL FOOD REVIEW, July-Sept 1989

Kenney, Jeannine, & Fallert, Dick, "Livestock Hormones in the United States", NATIONAL FOOD REVIEW, July-Sept 1989

Krissoff, Barry, "The European Ban on Livestock Hormones and Implications for International Trade", NATIONAL FOOD REVIEW, July-Sept 1989

Kuchler, Fred, McClelland, John & Offutt, Susan, "Regulating Food Safety: The Case of Animal Growth Hormones", NATIONAL FOOD REVIEW, July-Sept 1989

Mattera, Philip, INSIDE U.S. BUSINESS, Business One Irwin, 1991

Shellenbarger, Sue, "Iowa Beef's Effort to Slash Labor Costs at Strike Site May Speed Industry Trend", WALL STREET JOURNAL, August 6, 1982.

Stuart, "Meatpackers in Stampede", FORTUNE, 103:67-68 (1981)

MOODY'S INDUSTRIAL MANUAL, Vol. 1, 1991

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APPENDIX A-1
DEFINITIONS

Beef Cows - female cattle, kept for nondairy purposes, which have calved one or more times.

Beef cow-calf production (cow-calf production) - any cattle-breeding enterprise operated primarily for the production and sale of young cattle subsequently grown out and conditioned for slaughter.

Biotechnology - includes any technique that uses living organisms or processes to make or modify products to improve plants or animals or to develop micro-organisms for specific use.

Boxed beef - primals or sub-primals packed in vacuum plastic wrapping and then placed in boxes for shipment to wholesalers or retailers.

Breaking - the cutting of carcasses into primal and sub-primal cuts.

Bulls - nc castrated male cattle.

Carcass beef - beef which has been slaughtered, skinned and cleaned and then cut into halves or quarter sections

Fabrication - the breaking and the cutting of carcasses or primals into retail cuts

Farm-to-retail price spread - measures the gross return, or al money received less the raw products cost, to all firms engaged in the slaughter, processing, transporting, wholesaling, and retailing of beef.

Feed concentrate - high-energy grain and other ingredient ration

Feedlot - an enterprise in which cattle are fed grain and other concentrate feedstuffs to produce carcasses grading Good or better when slaughtered.

Heifers - immature female cattle.

Hormones - chemicals given to cattle to affect their metabolism by improving the use of nutrients absorbed from feed.

Livestock raising - the maintenance and breeding of livestock--cattle, hogs, sheep, or other livestock--to produce animals for slaughter and ultimate resale to consumers

Meatpackers - firms engaged in the business of slaughtering and fabricating livestock

Meatprocessors - firms who do not slaughter livestock and are primarily involved in the manufacture and sale of processed meats.

Oligopoly - marketplace of many buyers and few sellers.

Oligopsony - marketplace of many sellers and few buyers.

Primals - major divisions of a beef carcass such as round, loins, and chucks.

Prime, Choice, Select - USDA quality grade designations applied to qualifying young, grain-fed steers and heifers

Retail cuts - meat pieces cut to the size that will be purchased by the final customer.

Steers - male cattle castrated before sexual maturity.

Sub-primals - smaller beef-carcass portions, but not retail cuts (for example top rounds, bottom rounds, and knuckles are sub-primals cut from the beef round.)

APPENDIX A-2
VERTICAL INTEGRATION OF BIG FIVE MEATPACKERS

BIG FIVE MEATPACKERS

Armour & Company
Swift & Company
Nelson Morris & Co.
Cudahy Brothers Co.
Schwarschild & Sulzberger (S&S, later Wilson & Co., Inc.)

VERTICAL INTEGRATION OF BIG FIVE MEATPACKERS

"By World War I two or more of the Big Five held joint interests in 117 corporations: 8 livestock loan companies scattered about the nation; 7 market publications specializing in live stock or meat news; 5 terminal railroads at major stockyards; 2 other railroads; 18 stockyards stretching from Brighton, Massachusetts, to San Francisco,; 22 banks with total resources of $97? million; 6 domestic and 2 foreign packing plants; 5 packing-machinery supply firms; 2 cottonseed-oil companies; 3 cold-storage warehouses; 1 foreign and 12 domestic rendering plants; 9 land-development companies; 8 public utilities; 6 miscellaneous business ranging from an auditing firm to a sand and gravel company; and 1 creamery-butter and cheese factory."[1]

In addition, they individually owned controlling interests in 564 domestic and foreign firms including:

1) cattle ranches;
2) stockyards;
3) packing and rendering plants;
4) railroad;
5) private-car lines;
6) cold-storage warehouses;
7) food-related enterprises, such as
    a) poultry & egg operations,
    b) creameries and dairies,
    c) fish canneries,
    d) oleomargarine plants, and
    e) pineapple plantations;
8) banks;
9) publishing companies;
10) sporting-goods manufacturers; and
11) a plumbing shop.

They also owned substantial minority interests in 145 other businesses with assets estimated at $5 billion.

---

[1] Skaggs, P. 105.

APPENDIX A-3
DESCRIPTION PROCESS AT MEATPACKING PLANT

The following description of the slaughter process at Iowa Beef's Holcomb, Kansas, plant comes from Mr. Skaggs excellent book, **PRIME CUT**, pages 191-192.

"Every day cowpunchers push 3,700 head of cattle into a chute that feeds its disassembly line with live raw material. As soon as a steer enters the building, it is automatically zapped by a pneumatic gun that fires a yellow pellet into its skull, stunning the animal, which stumbles to its knees, glassy-eyed. A worker hooks a chain onto a rear hoof, and the comatose beast is mechanically yanked from the platform to hang head down. 'The kill floor looks like a Red Sea,' a visiting journalist wrote: 'Warm blood bubbles and coagulates in an ankle-deep pool. The smell sears the nostrils. Men stand in gore with long knives slitting each steer's throat and puncturing the jugular vein. Each night the gooey mess is wiped away from the red brick floors and galvanized steel as required by federal regulation.

The dead animal, moved steadily by chain hoist, passes rudimentary disassembly stations consisting of whirring machines and sweating men and women. A skinning machine strips off the hide. Then the carcass is decapitated, the tongue split and removed, all parts being placed on hooks attached to the moving chain. The carcass is gutted, the entrails being inspected and then dropped into stainless-steel containers for eventual use in pet food and other by products. Disemboweled, the half-ton carcass is pulled through a mechanical washer, quickly examined by an employee of the USDA Food Safety and Inspection Service (FSIS), and split in two by a team of workers maneuvering motorized saws that rip through bone in seconds. Halves are weighted, washed again, wrapped in sanitary cloth shrouds, and store overnight in a hug, chilled meat locker.

The next day the halves are moved mechanically into the processing department, where they are set upon by brawny workers with power saws who section the beef into its familiar forms--round, sirloin, short loin, rib, chuck, short plate, and brisket--which are tossed onto conveyor belts, each manned by thirty or forty boners and trimmers with assigned, specific tasks. 'As far as the eye can see there are waves of white-frocked workers with knives furiously attacking the meat. Each hour, 250 cows are butchered and boxed in the brightly lit, cavernous expanse. There is no time for idle chatter or daydreams here. A worker devotes the split-second free time between meat slabs sharpening his knife--a dull blade slows production and hurts hands. Concentration is essential as a clean cut.' A chunk of meat may be handled by three or four persons working on the conveyor belt before it reaches the end of the disassembly line, where--now resembling the basic cuts

of the supermarket display case--it is vacuum-packed, boxed, and hauled into a vast, computer-controlled cold-storage warehouse capable of handling 93,000 fifty-pound boxes. From there it is eventually trucked to distribution points around the country."

APPENDIX A-4
LIVESTOCK EXCHANGES

TERMINAL MARKETS

There are 28 livestock terminal markets, most located in the seven west north-central states. At a terminal market the firm negotiates the sale for a commission. The seller pays for yardage, feed and handling charges. They handle less than 10% of sales.

AUCTIONS

Beef cattle may also be sold at an auction market where price is established by open, public bidding. They are found in all parts of the United States. Over 80% of cow-calf operators use auctions to sell some of their cull cows and feed calves. Auctions are most important for the sale of slaughter cows and bulls.

DIRECT SALES

Direct sales are the most important exchange outlet for slaughter steers and heifers, accounting for over 85% of sales to packers. Cattle are sold directly by the farmer or feedlot to the packer buyers, country dealers, order buyers, country buying stations, local markets, or other producers.

OTHER SALES THROUGH AGENTS

Farmers also sell cattle through various intermediaries--country commission firms, order buyers, and bargaining associations. Country commission firms and bargaining associations act as agents for the seller, while order buyers act as agents for buyers.

FIGURE B-1
BIOLOGICAL LAG IN BEEF PRODUCTION

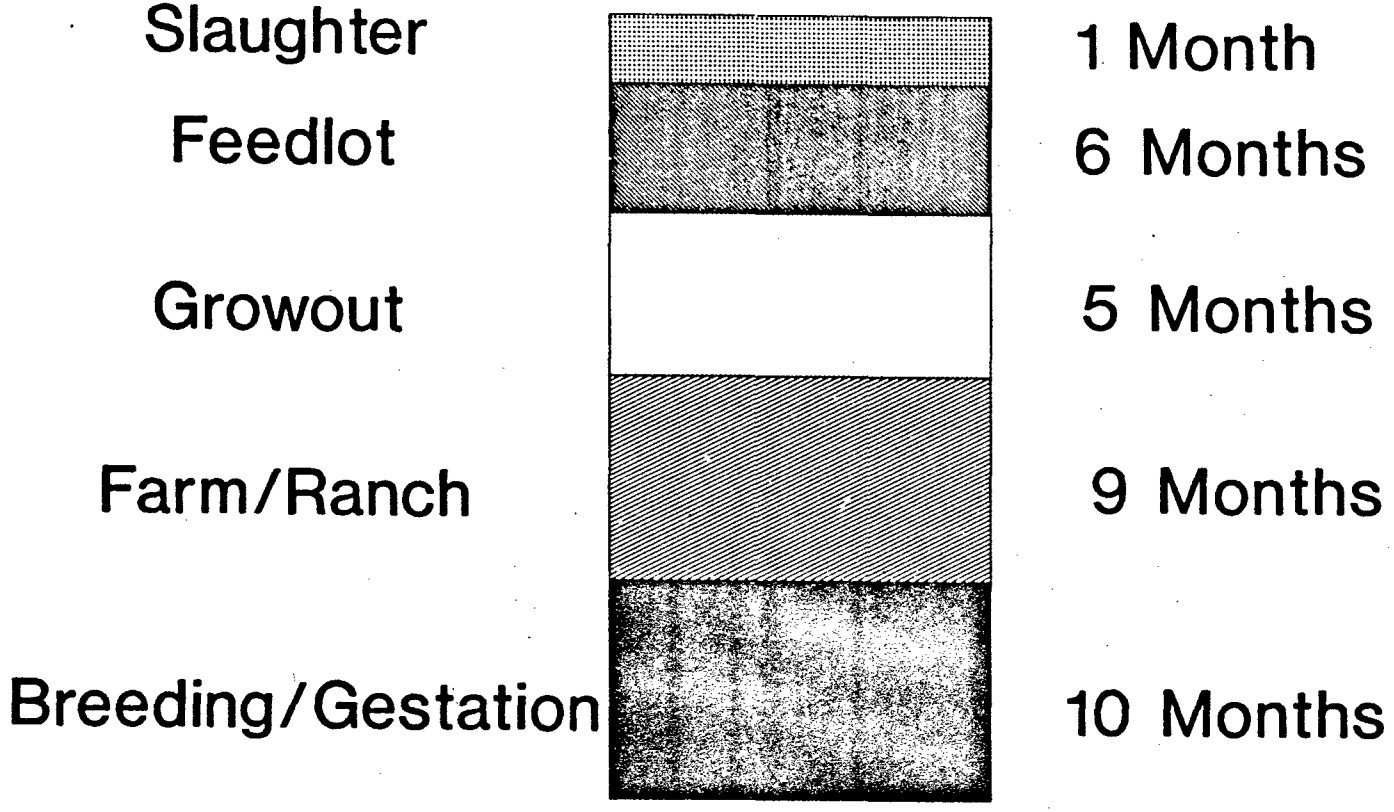


FIGURE B-2
BEEF INDUSTRY STRUCTURE

CONSUMERS (248M)

WHOLESALE/RETAIL (34,500)

MEATPACKERS (1,200)

FEEDLOTS (46,900)

RANCHERS/FARMERS (644K)

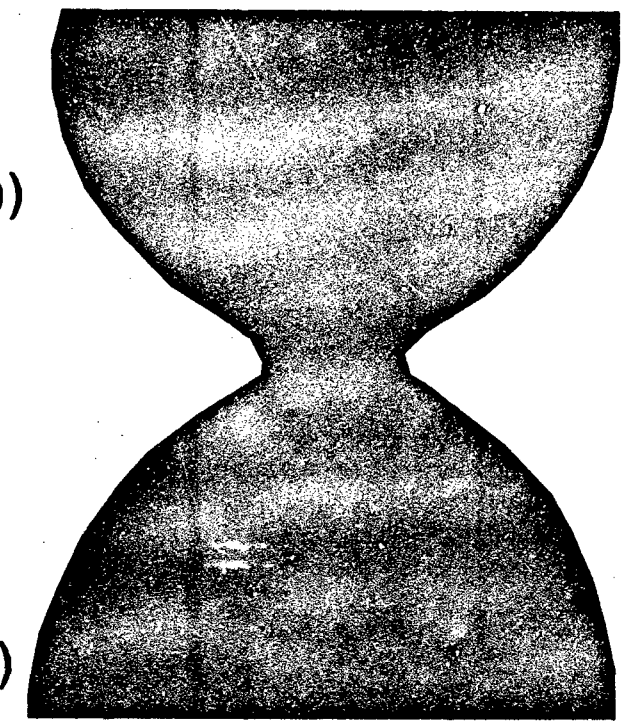
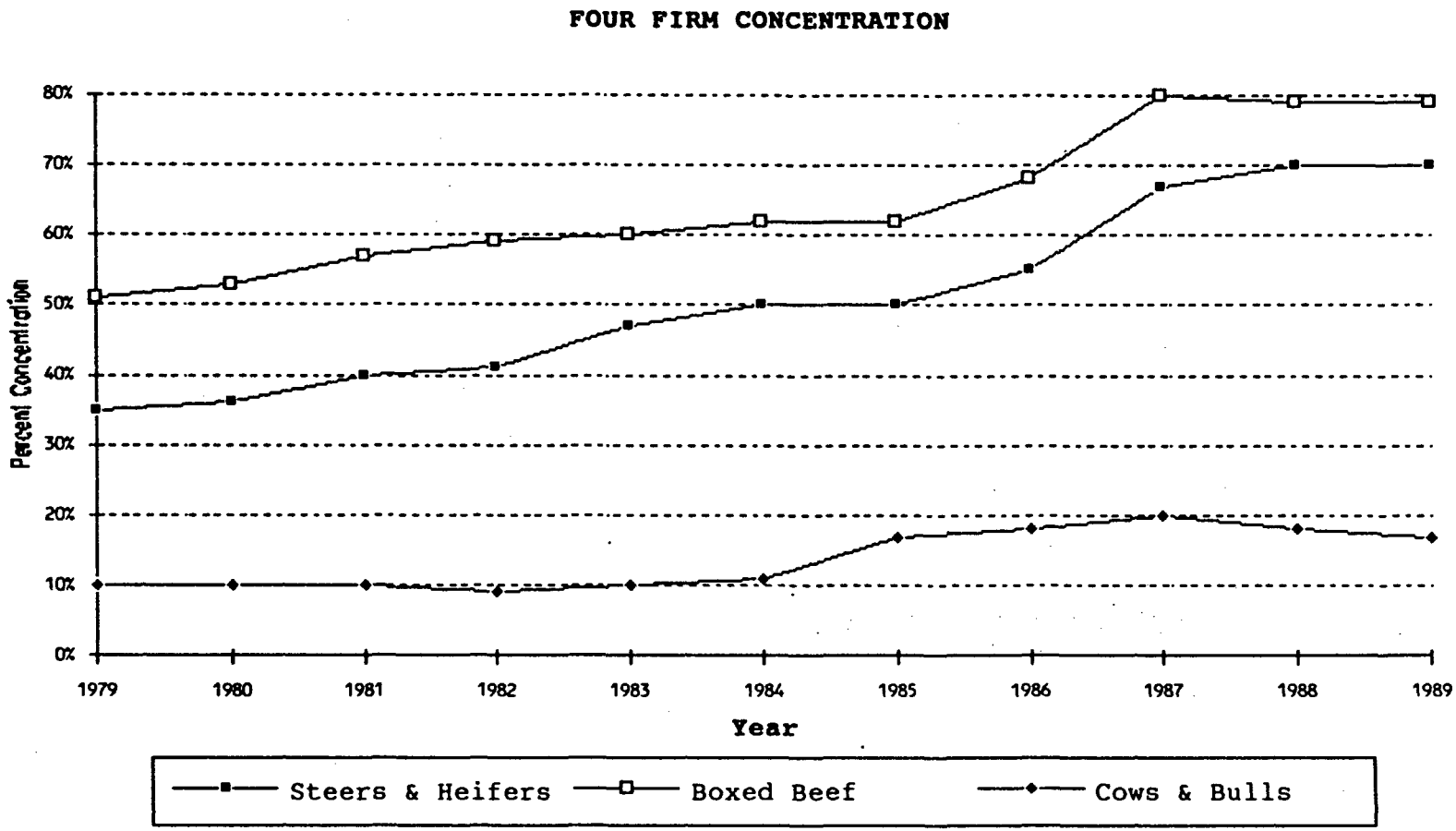
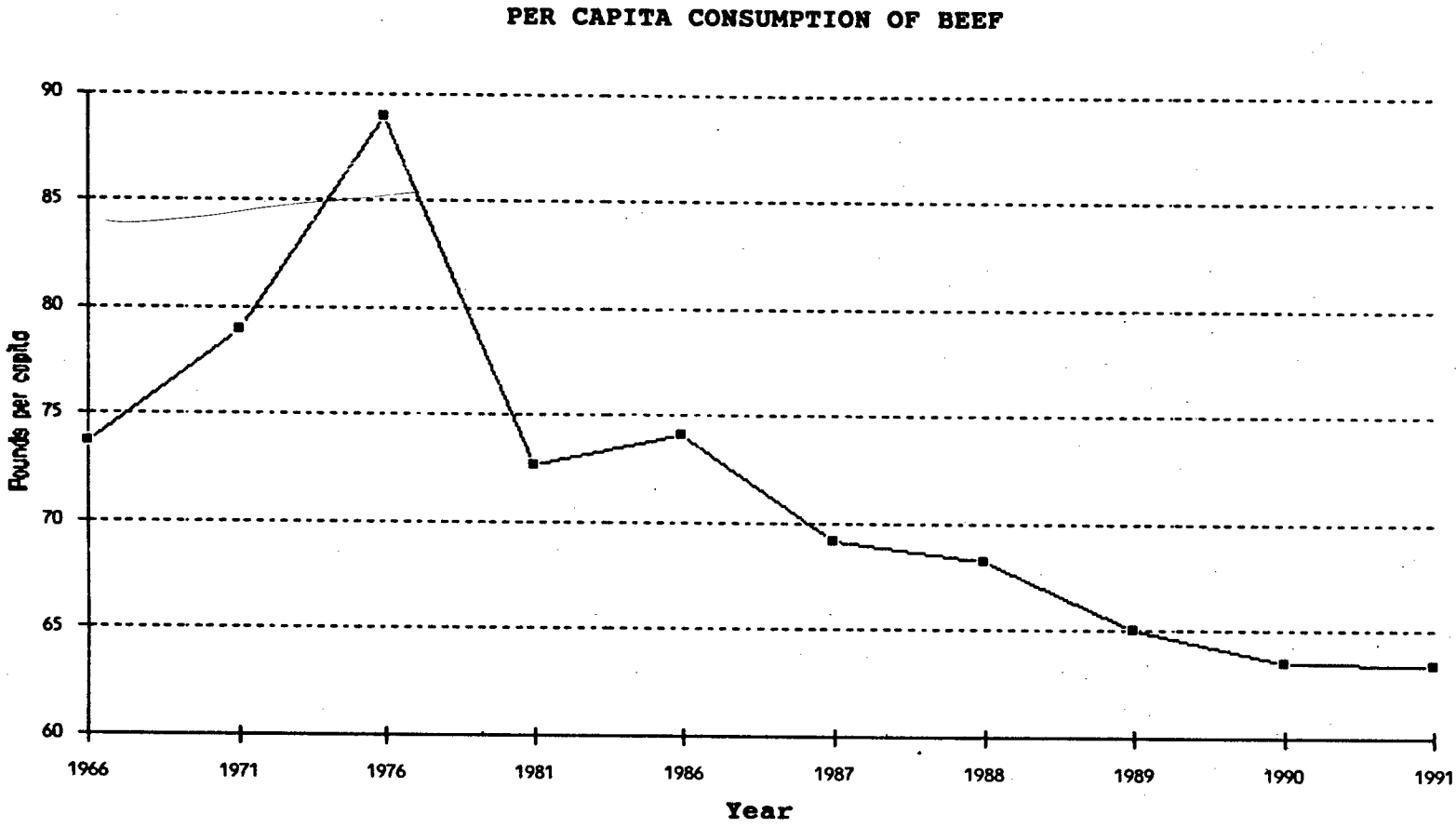


FIGURE B-3



SOURCE: PACKERS AND STOCKYARDS ADMINISTRATON

FIGURE B-4



SOURCE: U.S. INDUSTRIAL OUTLOOK 1992

TABLE C-1

STATISTICS ON RAISING OF BEEF CATTLE

	1987	1982	
TOTAL IN BEEF CATTLE (SIC 0211 & 0212)			
Total # of Establishments	841,778	957,698	-12.10%
Inventory of Beef Cattle (# head)	31,652,593	34,202,607	-7.46%
STATISTICS FOR SIC 0212 1/			
Total # of Farms	643,831		
# Farms sales over $50,000	46,595		
% of total	5.54%		
# Acres	414,030,801		
Avg per farm	643		
Inventory of Beef Cattle	21,682,154		
Avg per farm	34		
Value Cattle Inventory 2/	$15,350,922		
Avg per farm	$23,843		
Avg value per cow	$340		
Total Sales 2/	$15,040,256		
Avg per farm	$23,361		
Government payments received /2	$751,725		
Sale of Cattle 2/	$13,220,241		
Avg per farm	$20,534		
For farms w/sales over $50,000 2/	$8,618,676		
% of sales	65.19%		
Avg per farm	$184,970		
Total Expenses 2/	$13,196,086		
Avg per farm	$20,203		
Net Cash Returns 2/	$1,815,855,000		
Avg per farm	$2,780		
# Farms with net gains	324,840		
% Farms with net gains	38.59%		

Notes:
1/ SIC # 0212 is for all establishments except feedlots involved in production and feeding of beef cattle.
2/ In $1,000

Source: 1987 Census of Agriculture, Volume 1, Part 51,
Part 51, United States Summary, Table 53

TABLE C-2
NUMBER OF FEEDLOTS

Feedlot Capacity	1962 #	1970 #	1980 #	1989 #	% Changes
Number of Feedlots					
Under 1,000 Head	162,451	119,436	76,175	45,235	-72.15%
1,000 Head and over	1,271	1,856	1,896	1,648	29.66%
Total	163,722	121,292	78,071	46,883	-71.36%

Source: Krause, Kenneth R., CATTLE FEEDING, 1962-89, USDA, Table 7.

TABLE C-3
U. S. FED CATTLED MARKETED BY FEEDLOT SIZE AND NUMBER OF LOTS

(1,000 of head)	Lots Number	Lots Cumulative Number	Lots %	Cattle Marketed Number	Cattle Marketed Cumulative Number	Cattle Marketed %
50,000 and over	32	32	0.07%	3,811	3,811	16.60%
32,000 - 49,999	47	79	0.17%	3,142	6,953	30.29%
24,000 - 31,999	52	131	0.28%	2,444	9,397	40.94%
16,000 - 23,999	67	198	0.42%	2,268	11,665	50.82%
8,000 - 15,999	193	391	0.83%	3,503	15,168	66.08%
4,000 - 7,999	212	603	1.29%	1,666	16,834	73.33%
2,000 - 3,999	390	993	2.12%	1,442	18,276	79.62%
1,000 - 1,999	666	1,659	3.54%	919	19,195	83.62%
Under 1,000	45,224	46,883	100.00%	3,760	22,955	100.00%
Total	46,883			22,955		

Source: Krause, Kenneth R., CATTLE FEEDING, 1962-89, USDA, Table 12.

TABLE C-4

BEEF CATTLE PRICES, 1982 - 1990

	FARMER'S CATTLE	PRICE /1 CALVES	STEERS Choice 3/	FEEDLOT STEERS Select 4/	PRICE 2/ COW BEEF Canner	MEATPACKER BOXED Choice 3/	MEATPACKER BEEF Select 4/	PRICES 5/ BEEF Choice 3/	PRICES 5/ DRESSED Select 4/	PRICES 5/ COW BEEF Canner
1982	$56.70	$59.80	$64.22	$59.47	$36.50	$105.70	N.A.	$101.68	$97.82	$78.96
1983	$55.50	$61.70	$62.52	$56.99	$36.35	$101.96	N.A.	$97.87	$93.50	$78.48
1984	$57.30	$59.90	$65.34	$59.14	$35.88	$103.30	N.A.	$100.17	$95.79	$74.70
1985	$53.70	$62.10	$58.37	$53.28	$35.88	$97.95	N.A.	$90.68	$87.50	$74.13
1986	$52.60	$61.10	$57.74	$52.04	$34.25	$94.61	$89.21	$89.00	$84.34	$71.31
1987	$61.10	$78.50	$64.60	$58.53	$40.91	$103.84	$98.61	$97.24	$91.78	$83.70
1988	$66.60	$89.20	$69.58	$67.06	$44.52	$110.34	$103.28	$103.07	$96.79	$87.64
1989	$69.50	$90.80	$72.52	$70.28	$45.23	$114.78	$109.54	$107.78	$101.95	$94.27
1990	$74.60	$95.60	$77.40	$75.23	$50.46	$123.21	$116.60	N.A.	N.A.	$99.96

	VALUES			FARM TO RETAIL SPREAD	
	Retail Price	Wholesale Value 6/	Farm Value 6/	Total	Wholesale to Retail	Farm to Wholesale
1982	$2.38	$1.66	$1.41	$0.97	$0.72	$0.25
1983	$2.34	$1.60	$1.37	$0.97	$0.74	$0.23
1984	$2.36	$1.63	$1.41	$0.95	$0.73	$0.22
1985	$2.29	$1.49	$1.27	$1.02	$0.80	$0.22
1986	$2.27	$1.47	$1.25	$1.02	$0.80	$0.22
1987	$2.38	$1.60	$1.39	$0.99	$0.78	$0.21
1988	$2.50	$1.69	$1.48	$1.02	$0.81	$0.21
1989	$2.65	$1.77	$1.58	$1.07	$0.88	$0.19
1990	$2.81	$1.90	$1.68	$1.13	$0.91	$0.22
Avg	$2.44	$1.65	$1.43	$1.01	$0.79	$0.22

Notes:
1/ Average price per 100 pounds received by farmers.
2/ Average price per 100 pounds by grades received by Feedlots at Omaha
3/ Choice 700-800 lbs
4/ Select 600-700 lbs.
5/ Average Mid-west wholesale price per 100 pounds (carlot basis) received by meatpackers.
6/ Value equivalent to one pound of beef at retail,less byproduct value.

Source: AGRICULTURAL STATISTICS 1990, USDA, Tables 393, 394 & 401. 1991 MEAT FACTS, American Meat Institute, 1991, P. 9, 10 & 37.

TABLE C-5

LABOR STATISTICS FOR THE MEATPACKING INDUSTRY

EMPLOYMENT & EARNINGS

	1965	1975	1985	1988	1989	1990
MEATPACKING						
Total employment	193,300	168,200	140,300	142,200	144,600	139,500
Production workers	149,100	135,700	116,500	119,100	121,100	117,700
% of Total	77.13%	80.68%	83.04%	83.76%	83.75%	84.37%
Average weekly earnings	$126.18	$234.74	$332.91	$352.35	$357.28	$359.68
Average weekly hours	42.4	41.4	41.1	41.6	41.4	41.2
Average hourly earnings	$2.98	$5.67	$8.10	$8.47	$8.63	$8.73
% Change in earnings				4.57%	1.89%	1.16%
ALL FOOD						
Average hourly earnings	$2.43	$4.61	$8.57	$9.11	$9.33	$9.63
% Change in earnings				6.30%	2.41%	3.22%
ALL MANUFACTURING						
Average hourly earnings	$2.61	$4.83	$9.54	$10.18	$10.47	$10.84
% Change in earnings				6.71%	2.85%	3.53%

PRODUCTIVITY

BEEF PRODUCTION						
Total Meat Production	31,539	36,762	39,404	40,004	39,602	38,785
Beef Production	18,727	23,976	23,728	23,590	23,088	22,743
% Change in Production	38.01%	28.03%	-1.03%	-0.58%	-2.13%	-1.49%
Average % growth	3.80%	2.80%	-0.10%			-1.40%
PRODUCTIVITY						
Output per laborer (lbs./employee)	264	290	332	336	327	330
% Growth		9.85%	14.48%	1.20%	-2.68%	0.92%
Average % growth						-0.19%

SAFETY

	1985	1986	1987	1988	1989
INJURIES/100 EMPLOYEES					
Incident rate	30.4	33.4	38.4	39.2	35.1
Lost workdays					
Total relportable cases	26.3	27	30.4	30.1	26
Lost workday cases	13	12.2	13.6	14.3	13.1
Non-loss day cases	13.3	14.8	16.8	15.8	12.9
Lost Workdays	200.3	190.3	241.9	238.3	222.7

Source: 1991 MEAT FACTS, American Meat Institute, 1991, P. 16, 34 & 35.

TABLE C-6

MEATPACKING BEEF SALES 1989 - 1991

MEATPACKING PLANT (SIC 2011)

TOTAL PRODUCT SALES 1/	1989	1990	1991 1/
(In Billion dollars)			
Value of Sales	$42,799	$45,617	$44,220
Value of Sales (1987$)	$40,080	$38,872	$39,790
% Change Value		6.58%	-3.06%
% Change Value 1987$		-3.01%	2.36%
BEEF PRODUCT SALES 2/			
Value of Sales	$22,892	$24,400	$23,653
Value of Sales (1987$)	$21,438	$20,792	$21,283
% Change Value		6.58%	-3.06%
% Change Value 1987$		-3.01%	2.36%

SALES OF BOXED BEEF (SIC 5147) 3/

Value of Sales	$21,588	$22,371	$21,644
Value of Sales (1987$)	$20,217	$19,063	$19,476
% Change Value		3.63%	-3.25%
% Change Value 1987$		-5.70%	2.16%

TOTAL BEEF SALES

Value of Sales	$44,481	$46,771	$45,297
Value of Sales (1987$)	$41,655	$39,856	$40,759
% Change Value		5.15%	-3.15%
% Change Value 1987$		-4.32%	2.27%

BEEF SALES TO DEPARTMENT OF DEFENSE

(In million dollars)	1989
Troop Feeding	$133
Commissaries	$181
Total	$314
% of Total sales	0.71%

Notes:
1/ Sale all products from meatpackers.
2/ Computed based on beef's percentage of red meat sales.
3/ Estimated from data provided by American Meat Institute

Sources: U.S. INDUSTRIAL OUTLOOK 1991, P. 32-3..
DPSC SALES FOR TROOP FEEDING
GAO REPORT ON BEEF PROCUREMENT, NSIAD-91-100, P. 3.
1991 MEAT FACTS, AMERICAN MEAT INSTITUTE, P 30.

TABLE C-7

CATTLE AND CALVES: PRODUCTION, DISPOSITION AND GROSS INCOME

Year	Quantity Produced 1/ (1,000 LBS)	Value of Production 1/ ($1,000)	% Change	Cash receipts from sales 1/ ($1,000)	% Change	Value home consumption 2/ ($1,000)	Gross Income 1/ ($1,000)	% Change
1975	40,900,606	$12,804,719		$17,520,176		$458,250	$17,978,426	
1976	41,398,356	$13,826,938	7.98%	$19,293,597	10.12%	$501,630	$19,795,227	10.11%
1977	40,744,829	$13,977,695	1.09%	$20,225,347	4.83%	$482,340	$20,707,687	4.61%
1978	39,971,171	$19,553,169	39.89%	$28,248,127	39.67%	$565,081	$28,813,208	39.14%
1979	38,803,335	$26,246,763	34.23%	$35,024,950	23.99%	$693,892	$35,718,842	23.97%
1980	40,283,777	$25,468,867	-2.96%	$31,827,906	-9.13%	$623,698	$32,451,604	-9.15%
1981	41,178,209	$23,682,144	-7.02%	$29,537,848	-7.20%	$600,885	$30,138,733	-7.13%
1982	40,714,722	$22,623,349	-4.47%	$29,813,318	0.93%	$576,645	$30,389,963	0.83%
1983	40,356,342	$22,047,169	-2.55%	$28,864,375	-3.18%	$554,512	$29,418,887	-3.20%
1984	40,055,102	$22,149,276	0.46%	$30,588,872	5.97%	$551,574	$31,140,446	5.85%
1985	40,120,920	$21,184,833	-4.35%	$29,002,301	-5.19%	$483,255	$29,485,556	-5.31%
1986	40,589,257	$20,989,371	-0.92%	$28,865,089	-0.47%	$451,180	$29,316,269	-0.57%
1987	40,502,303	$24,765,784	17.99%	$33,583,325	16.35%	$473,706	$35,057,031	19.58%
1988	40,617,645	$27,247,086	10.02%	$36,201,465	7.80%	$481,591	$36,683,056	4.64%
1989	40,051,116	$27,892,871	2.37%	$36,675,896	1.31%	$447,115	$37,123,011	1.20%

Notes:
1/ Includes both farms and feedlots.
2/ Value of cattle and calves slaughtered for home consumption.

Source: AGRICULTURAL STATISTICS 1990, USDA, Table 393

TABLE C-8

MEAT INDUSTRY SALES BREAKDOWN BY TYPE AND SPECIES

	Meat Processors 1/	Meat-Packers 2/	Cattle Packers 3/	Hog Packers 3/
Total Sales	100.00%	100.00%	100.00%	100.00%
Livestock & Meat	55.08%	81.94%	89.20%	71.10%
Supplies and Containers	8.70%	3.27%	2.00%	5.56%
Production Labor	7.40%	4.42%	2.75%	6.66%
Cost of Goods Sold	71.19%	89.63%	93.95%	83.26%
Gross Margin	28.81%	10.37%	6.05%	16.74%
Other Wages & Salaries	4.70%	2.10%	1.54%	3.09%
Employee Benefits				
Retirement Expenses	0.39%	0.14%	0.04%	0.30%
Payroll Taxes	1.23%	0.59%	0.35%	0.95%
Insurance & Hospilization	1.44%	0.65%	0.28%	1.18%
All Other Benefits	1.02%	0.44%	0.11%	0.71%
Total Benefits	4.08%	1.82%	0.78%	3.14%
Interest	0.40%	0.42%	0.37%	0.54%
Depreciation	1.47%	0.74%	0.45%	1.09%
Rents	0.45%	0.17%	0.06%	0.40%
General & Admin Insurance	0.20%	0.54%	0.23%	1.01%
Taxes 4/	0.24%	0.09%	0.05%	0.13%
All Other Expenses	11.70%	2.92%	2.22%	4.26%
Total Operating Expenses	94.44%	98.44%	99.65%	96.93%
Earnings Before Taxes	5.56%	1.56%	0.35%	3.07%
Income Tax	1.92%	0.34%	0.19%	0.47%
Net Earings	3.64%	1.22%	0.16%	2.60%

Notes:
1/ Companies that slaughter livestock and have sales primarily of fresh meat.
2/ Firms that do not slaughter livestock and are primarily involved in the manufacture and sale of processed meats.
3/ Slaughter of indentified species represents 75% of their total live weight slaughter.
4/ Other than Social Security and Income Tax.
Source: 1991 MEAT FACTS, American Meat Institute, 1991, P. 32.

TABLE C-9

CONSOLIDATED STATEMENT OF EARNINGS FOR IBP 1987 - 1989

	1987 ($000)	% of sales	1988 ($000)	% of sales	1989 ($000)	% of sales
Total Sales	$7,681,343		$9,066,101		$9,128,596	
Cost of Products Sold	$7,469,555	97.24%	$8,832,043	97.42%	$8,938,628	97.92%
Selling, etc. Expenses	$78,876	1.03%	$92,187	1.02%	$86,696	0.95%
Operating Income	$132,912	1.73%	$141,871	1.56%	$103,272	1.13%
Interest Expense	$13,731	0.18%	$41,243	0.45%	$48,047	0.53%
Income Before Taxes	$119,181	1.55%	$100,628	1.11%	$55,225	0.60%
Taxes	$51,300	0.67%	$38,300	0.42%	$19,900	0.22%
Net Income	$67,881	0.88%	$62,328	0.69%	$35,325	0.39%
Previous Retained Earnings	$189,818		$10,950		$44,876	
Dividends Paid	$246,749		$28,402		$28,396	
Retained Earnings	$10,950		$44,876		$51,805	
Earnings, Common Share	$1.10		$1.32		$0.74	

% CHANGE	1988 vs 1987	1989 vs 1988
Total Sales	18.03%	0.68%
Cost of Products Sold	18.24%	1.19%
Selling, etc. Expenses	16.88%	-6.33%
Operating Income	6.74%	-37.38%
Interest Expense	200.36%	14.16%
Income Before Taxes	-15.57%	-82.21%
Taxes	-25.34%	-92.46%
Net Income	-8.18%	-76.44%

Source: MOODY'S INDUSTRIAL MANUAL, Volume 3, p. 3-116

TABLE C-10 EXPORTS AND INPORTS BEEF AND LIVE CATTLE

U.S. IMPORTS & EXPORTS PROCESSED BEEF AND VEAL

Year	Production	Imports	Exports	Net Imports	Imports	Exports	Net Imports
		(Million Pounds Carcass Equivalent)			Percent of U.S. Production		
1981	22,628	1,761	221	1,540	7.78%	0.98%	6.81%
1982	22,789	1,958	254	1,704	8.59%	1.11%	7.48%
1983	23,488	1,950	276	1,674	8.30%	1.18%	7.13%
1984	23,897	1,847	336	1,511	7.73%	1.41%	6.32%
1985	24,056	2,091	332	1,759	8.69%	1.38%	7.31%
1986	24,722	2,156	526	1,630	8.72%	2.13%	6.59%
1987	23,821	2,294	611	1,683	9.63%	2.56%	7.07%
1988	23,811	2,406	690	1,716	10.10%	2.90%	7.21%
1989	23,318	2,179	1,023	1,156	9.34%	4.39%	4.96%
1990	22,950	2,356	1,006	1,350	10.27%	4.38%	5.88%

Source: 1991 MEAT FACTS, American Meat Institute, 1991, P. 57.

U.S. TRADE IN LIVE BEEF CATTLE

Year	Exports	Inports	Net Imports
		(1,000 Dollars)	
1985	$106,445	$238,777	$132,332
1986	$120,992	$326,021	$205,029
1987	$98,861	$457,199	$358,338
1988	$166,995	$594,598	$427,603
1989	$152,104	$562,595	$410,491

U.S. EXPORTS TO THE EC

Year	Beef	LIve Animals	Hides	Total
		(1,000 Dollars)		
1987/88	$34,772	$195,968	$37,984	$268,724
1988/89	$13,014	$181,870	$54,491	$249,375
% Change	-62.57%	-7.19%	43.46%	-7.20%

Source: AGRICULTURE STATISTICS 1990, USDA, Tables 686 and 687.

EUROPEAN COMMUNITY IMPORTS AND EXPORTS OF BEEF

Year	Production	Imports	Exports	Net Imports	Imports	Exports	Net Imports
		(Million Pounds Carcass Equivalent)					
1985	14,688	3,360	4,088	-728	22.88%	27.83%	-4.96%
1986	14,952	3,468	5,038	-1,570	23.19%	33.69%	-10.50%
1987	15,020	3,538	4,428	-890	23.56%	29.48%	-5.93%
1988	14,222	3,544	4,186	-642	24.92%	29.43%	-4.51%
1989	13,988	3,484	4,284	-800	24.91%	30.63%	-5.72%

Source: WESTERN EUROPE, AGRICUTLURE AND TRADE REPORT, USDA, 1989, Table 19.